

STATE OF NEW HAMPSHIRE
PUBLIC UTILITIES COMMISSION

DOCKET DE 20-092

IN THE MATTER OF: Electric and Gas Utilities

 2021 – 2023 Triennial Energy Efficiency Plan

DIRECT TESTIMONY

OF

Stephen R. Eckberg
Utility Analyst

October 29, 2020

1 **Introduction**

2 **Q. Please state your full name?**

3 A. My name is Stephen R. Eckberg

4 **Q. By whom are you employed and what is your business address?**

5 A. I'm employed as a Utility Analyst with the Electric Division of the New Hampshire Public
6 Utilities Commission (PUC). My business address is 21 South Fruit Street, Suite 10,
7 Concord, NH.

8 **Q. Please summarize your education and professional work experience.**

9 A. I was employed as a Utility Analyst with the New Hampshire Office of Consumer Advocate
10 for seven years prior to joining the PUC's Sustainable Energy Division. In 2019, I joined the
11 PUC's Electric Division. A more complete listing of my education and professional work
12 experience is included as Attachment SRE-1 to my testimony.

13 **Q. What is the purpose of your testimony in this proceeding?**

14 A. The purpose of my testimony is to provide Staff's comments and recommendations on
15 several issues in the 2021 -2023 Triennial Energy Efficiency Plan filed by the Electric and
16 Natural Gas utilities on September 1, 2020 including:

- 17 1. The proposed behavioral energy efficiency programs including Home Energy Reports
18 and the new Aerial Infrared Mapping program.
19 2. The Home Energy Assistance program.
20 3. Workforce Development and Education.

21 **Q. Which utilities are planning to offer a Home Energy Reports (HER) program in the**
22 **2021-2023 triennium?**

1 A. Liberty (Electric and Natural Gas) and Unitil (Electric and Natural Gas) plan to continue to
2 implement the HERs that they have delivered to their customers for the last several years.
3 Details of the Liberty implementation can be found at Section 6.1.1. of the Plan at Bates 157.
4 Details of the Unitil implementation for its electric and natural gas customers (Northern
5 Utilities) is found at Section 6.1.2. of the Plan beginning at Bates 162.

6 **Q. Are there any significant changes in the HER program delivery, savings estimation**
7 **methodology, or other aspects of the program?**

8 A. Both Liberty and Unitil plan to continue to offer the HER programs through their contractor
9 Oracle¹ delivering a mix of paper and email-based reports to a “treatment group” of
10 customers who receive data about their residential energy use in comparison to an
11 appropriate peer group. The frequency of customer contacts occurs regularly throughout the
12 year with increased frequency for gas heating customers during the heating season months.
13 This is generally consistent with program delivery in prior years. A change in savings
14 methodology is being proposed in that both utilities have decided to change the accounting
15 methodology for computing energy savings for the HER program. Currently, they use a
16 three-year measure life and account for energy savings, which persist from year to year. The
17 three-year measure life means that the energy consumption reduction behaviors which occur
18 as a result of the customer contacts and information provided in a given program year
19 actually persist beyond the initial year – in fact, for nearly three years. Indeed, research has
20 shown that even if the participating treatment group receives the program information for one
21 year, there is savings persistence for several years following the cessation of outreach. This
22 reflects the fact that the learned “energy efficiency behaviors” take time to “wear off.”

¹ <https://www.oracle.com/industries/utilities/products/what-is-opower.html>

1 Liberty Electric and Gas intend to transition to a one year measure life (which includes an
2 amount to account for persistence savings in subsequent years) to simplify the savings
3 accounting, improve forecasting, and remove the savings variability that occurs with the use
4 of the multi-year measure life approach.² In response to discovery, Unitil confirmed that it
5 too, was transitioning to the one-year measure life for savings in its HER program.³ In fact,
6 both Liberty and Unitil have confirmed that their transition to use of the one-year measure
7 life will occur in 2020 so that the annual savings estimates in each year of the 2021-2023
8 Plan will not include any persistence savings from prior years.

9 **Q. Is Staff comfortable with this transition from a multi-year savings approach to a one-**
10 **year savings approach?**

11 A. Yes. Over the course of the numerous planning sessions and discussions with the Evaluation,
12 Measurement, and Verification (EM&V) group, Staff's EM&V consultant, SERA, had
13 expressed its strong preference for use of the one year measure life approach rather than the
14 multi-year approach. SERA has significant experience in the review of implementations of
15 HER programs in other jurisdictions and has expressed its preference for the simplicity of the
16 one-year measure life approach.

17 Staff has discussed the matter extensively with SERA, has reviewed the material that Liberty
18 and Unitil have provided in response to discovery⁴ and agrees that the transition to using the
19 one-year measure life savings approach is appropriate, reasonable, and will result in easier to
20 understand annual savings estimates from the program.

² 2021-2023 Triennial Energy Efficiency Plan at Bates 155.

³ Attachment SRE-2 Response to Staff 2-046.

⁴ Attachment SRE-2 Response to Staff 2-046 and Attachment SRE-7 Unitil Response to Staff 4-001.

1 **Q. Does Staff have any further recommendations regarding the HER program of Liberty**
2 **and Unital?**

3 A. Yes. Currently, the energy savings estimates which are reported and used in the calculations
4 of LBR and PI are produced by the program delivery contractor – Oracle. Staff recommends
5 that an external evaluation of the HER program be included in the EM&V plan in 2021 so
6 that savings estimates produced for the HER program can be independently validated. In
7 particular, Staff’s recommendation, based on input from SERA, is that first year savings for a
8 HER program implementation similar to this one, where the treatment group remains
9 basically unchanged over time, should be based on observed savings between the treatment
10 group (those who receive the HER program information outreach) and the control group (a
11 similar group of customers who do not receive the program outreach).

12 **Q. Are there any other changes of note in the 2021-2023 Plan regarding behavioral energy**
13 **efficiency programs?**

14 A. Yes. Liberty Gas is proposing a new program for its residential customers in New
15 Hampshire – the Aerial Infrared Mapping (AIM) program.

16 **Q. What are the program objectives and how will it work?**

17 A. The AIM program’s objective are to efficiently capture large volumes of detailed information
18 about the general weatherization condition of Liberty’s residential customers and to share
19 useful visual information with a group of those customers to: improve literacy on
20 opportunities for improving building efficiency; motivate customers to participate in the
21 Home Energy Assistance (HEA) and Home Performance with EnergyStar (HPwES)
22 programs; and enable the Company to better qualify and prioritize weatherization projects.

1 Liberty and its implementation partner, MyHEAT, Inc.⁵, plan to gather aerial thermal images
2 to produce unique building HEAT maps. The detail provided to each customer is a
3 personalized resource to enable a visual comparison of heat loss from the customer's home
4 with others in their vicinity. The AIM program using MyHEAT's technology and
5 implementation has been deployed in utility service areas in both the US and Canada and is
6 based on peer reviewed research in Urban Thermal Remote Sensing from the University of
7 Calgary.

8 **Q. What is the proposed timeline for the implementation of the AIM program?**

9 A. Liberty's plan for the program is that the MyHEAT contractor will perform two flyovers of
10 the Liberty Gas service territory from Nashua up through Manchester and Concord in Spring
11 2021 and again in Spring 2023. These flyovers will collect the aerial thermal imaging data
12 needed to generate HEAT maps and HEAT ratings for individualized customer marketing
13 material. Liberty states that "a unique customer-facing platform will be designed."⁶

14 **Q. Are there any concerns about issues such as data privacy or customer interest with such**
15 **a new program effort?**

16 A. Yes, both of these issues are of concern to the Company and Staff. Staff believes that the
17 Company has adequately addressed privacy concerns through the program design elements
18 where customers can choose to "opt-out" of participation so that no heat mapping data would
19 be available for their location. Further, the web-based information platform that will be
20 available will be private so that even participating customers cannot "browse" the thermal
21 imaging data of all homes in their neighborhood or city. This is distinctly different than the

⁵ MyHeat, Inc. website: <http://myheat.ca>.

⁶ 2021-2023 Triennial Plan at Bates 160.

1 implementation in certain Canadian cities where thermal imaging data appears available to
2 the public.⁷ Finally, Liberty conducted a customer survey earlier this year to gauge interest
3 and inform program design. The survey provided sufficient positive response and interest
4 from customers that the Company has chosen to pursue the program and has used
5 information gained from the survey to inform a NH specific program design.

6 **Q. Does Staff believe that Liberty’s proposal sufficiently addresses potential privacy**
7 **concerns?**

8 A. Staff is aware generally that there is a broad range in the level of concern among households
9 regarding privacy issues. Some households are interested in adopting new technologies such
10 as Amazon’s “Alexa”-enabled speakers and wifi-connected thermostats which provide the
11 ability to control a home’s heating system via an “app” on the users phone. Other
12 households choose to avoid such technology advancements. Therefore, Staff recommends
13 that the Company ensure that the AIM program implementation provides ample opportunity
14 for customers to learn about the program and opt-out if so desired.

15 **Q. Does the AIM program pass the benefit-cost test (the Granite State Test or GST) as**
16 **proposed?**

17 A. No and yes. The plan presents the GST results for each year individually and overall for the
18 full three year term. The GST values are as follows: for 2021 GST = 0.12, for 2022 GST =
19 1.10, for 2023 GST = 1.16, and overall for the three year term the GST = 0.66.⁸ This
20 demonstrates that the proposed AIM program is cost effective in its second and third year,
21 but not in its first year or when considered over the three year course of the plan. Though not

⁷ Attachment SRE-3 Liberty response to Staff 2-039 (c) “Liberty will not be providing this type of platform for public access viewing.”

⁸ 2021-2023 Triennial Plan at Bates 831, 834, 837, 840, respectively.

1 addressed specifically in the filing, it is likely that the initial startup costs, combined with the
2 lead time needed from approval to initial implementation late in 2021 result in very low cost-
3 effectiveness in the first year. This, in turn, has a significant downward impact on the overall
4 GST for the three-year term.

5 **Q. Are you aware of any way in which the GST results could be improved to demonstrate**
6 **cost-effectiveness?**

7 A. Yes. Initially, Staff was concerned that the AIM program proposal might be considered as an
8 intake or marketing component of the HPwES program because it seemed that a likely result
9 of the thermal imaging information being provided to customers would be that the customers
10 would participate in the HPwES program to make cost-effective energy efficiency
11 improvements to their homes. In response to discovery, the Company demonstrated that if
12 the costs of the AIM program are included within the overall costs of the HPwES program
13 the HPwES program remains cost effective. On its own, the HPwES program has a Granite
14 State Benefit-Cost Test (GST) value of 1.82 for the term. Including the AIM program costs
15 into the HPwES program, reduces the GST value to 1.58 for the term. This demonstrates that
16 the AIM program *could* be considered as cost effective if its costs were included within the
17 HPwES program.⁹

18 **Q. Will the AIM program use a one-year measure life savings approach as you discussed**
19 **for the Company's other behavioral energy efficiency program – the HER program –**
20 **above?**

⁹ Attachment SRE-4 Liberty response to Staff 2-047. The table provided shows the HPwES program is cost effective (GST = 1.82) over the term standing alone or with the costs of the AIM program included in HPwES (GST = 1.58).

1 A. The Company’s plan did not make it clear if the AIM program proposal will also use a one-
2 year measure life savings approach as it has proposed for the HER program. The Company
3 has said that in many respects the AIM program is “just like” the HER program, but will
4 differ mainly in the type of information it will provide to a different, non-overlapping group
5 of participating customers. Staff recommends that for consistency and simplicity in the
6 behavioral energy efficiency programs, that the AIM program also use a one-year measure
7 life savings approach.

8 **Q. What is Staff’s recommendation regarding the AIM program?**

9 A. Though the AIM program does not, by itself, demonstrate that it is cost effective over the
10 first three-year term, the program *could* be considered cost effective if it was included within
11 the HPwES program and therefore *could* be offered as part of the Triennial Plan. It is Staff’s
12 understanding that the Company prefers to offer the program separately, as doing so may
13 help demonstrate the stand-alone cost-effectiveness of this entirely new program effort. Staff
14 recommends that the Commission allow Liberty Gas to offer the AIM program conditioned
15 on the Company conducting an impact evaluation of the program within one year of the end
16 of the first three-year term demonstrating that the program’s cost effectiveness, for use in
17 evaluating the program for inclusion in the next three-year plan. Further, Staff recommends
18 that the impact evaluation of the program be done by an independent evaluator (not
19 associated with MyHeat), and that the evaluation control for likely increased participation in
20 the HPwES program by the AIM treatment group as not doing so would likely result in
21 double-counting of energy savings by AIM participants who also participate in HPwES.

22 **Q. Please discuss the Home Energy Assistance (HEA) program and any proposed changes**
23 **in the 2021-2023 plan.**

1 A. The HEA program provides energy efficiency improvements – products and services – to
2 income-eligible households at no cost to program participants. The program works to reduce
3 customer energy costs, reduce energy burdens and address weatherization services waiting
4 lists at New Hampshire’s Community Action Agencies (CAAs). The CAAs are the major
5 program delivery avenue for the HEA program as their service connection to low income
6 households through other income-eligible programs such as LIHEAP (Fuel Assistance) and
7 EAP (SBC-funded electric bill discount program) provides an efficient method for
8 determining program eligibility.

9 **Q. Are there any specific changes proposed for the program that you wish to bring to the**
10 **Commission’s attention?**

11 A. The plan includes several proposed changes including:

- 12 1. Introducing new “on ramps” to program participation which may include visual
13 audits, standalone appliance vouchers, and distribution of energy efficiency kits;¹⁰
- 14 2. New EE measures in the program including: clothes washers and dryers,
15 dehumidifiers, heat pump water heaters (HPWHs), and air conditioning equipment;¹¹
- 16 3. Increasing the spending limit per HEA household/project from \$8,000 to \$20,000.¹²

17 **Q. Is Staff supportive of the proposed changes?**

18 A. Staff is supportive of the inclusion of new pathways for program participation and additional
19 measures, but not the significant increase in the spending limit per household. The plan
20 states that “[t]he increased incentive cap of \$20,000 will ensure more homes are addressed
21 comprehensively, consequently driving energy savings in HEA.” Based on information

¹⁰ 2021-2023 Triennial Plan at Bates 129.

¹¹ Id.

¹² Id. at Bates 128.

1 provided in discovery¹³, Staff estimates that the *average* actual 2019 HEA project was
2 roughly \$4,400 with the program’s current \$8,000 project cap. Increasing the project
3 spending limit from \$8,000 to \$12,000 would provide the opportunity to make all cost
4 effective improvements at over 80% of projects. Staff recommends an increase of \$4,000 in
5 the project spending limit to balance the ability for CAAs to make additional cost effective
6 investments at *most* projects while ensuring sufficient funds are available to provide services
7 at *more* residences.

8 **Q. Does the 2021-2023 Triennial Plan include plans to invest in Workforce Development?**

9 A. Yes. Chapter 9 of the Plan¹⁴ provides information on the general plan to invest in workforce
10 development activities, which will include issuance of an RFP to engage a “lead vendor
11 responsible for designing and implementing a Workforce Development Strategy that supports
12 the NH Utilities workforce development plans.”¹⁵

13 **Q. Is it appropriate that the Plan include funding for these Workforce Development**
14 **activities?**

15 A. Yes it is. In 2019, a statutory change added language to RSA 374-F:3, VI stating that
16 “[e]nergy efficiency programs...shall also include funding for workforce development to
17 minimize waiting periods for low-income energy audits and weatherization.” So, it is
18 appropriate that the utilities have given consideration to this and are endeavoring to address
19 workforce issues.

20 **Q. Does the Plan include an annual budget for these Workforce Development activities?**

¹³ Attachment SRE-5 Response to Staff 1-021 and Attachment SRE-8 Response to Staff 2-014.

¹⁴ 2021-2023 Triennial Plan, Chapter Nine Workforce Development at Bates 201.

¹⁵ Id.

1 A. In response to discovery, the utilities provided additional detail and stated that the Workforce
2 Development funding will come from the Residential and C&I Education budgets for each
3 utility. This budget category also supports other customer education activities such as Button
4 Up workshops¹⁶, K-12 Education and Building Operator Certification courses¹⁷. The total
5 amount included in the Education Budgets over the term for all utilities is approximately \$5.6
6 million¹⁸. While there is not a specific amount directed to the Workforce Development
7 activities, the plan suggests that the utilities will devote significant resources to help ensure
8 success of the planned EE investments.

9 **Q. Is there a general indication of the tasks that the lead vendor will be responsible for?**

10 A. Yes, the plan includes a framework of goals, which will require more detailed development
11 when this Triennial Plan is approved and the RFP is developed. The framework includes the
12 following workforce development goals:

- 13 1. Identification of Workforce Development Needs.
- 14 2. Coordinate Implementation of New and Existing Training and Workforce
15 Development.
- 16 3. Coordinate Activities to Retain Existing Energy Efficiency Workers.
- 17 4. Coordinate Activities to Recruit Entrants to the Energy Efficiency Workforce.

18 **Q. Does Staff support the Plan's proposed investments in Workforce Development?**

19 A. Generally speaking, yes. Staff understands the need for both an educated and trained
20 workforce and educated and informed consumers of energy efficiency products and services
21 as integral components of the success of the overall Triennial Plan. As discussed above,

¹⁶ <https://nhsaves.com/events/button-up-workshop-february/> for example.

¹⁷ <https://www.lrcc.edu/programs-training/trainings-a-z/energy-services-and-technology/building-operator-certification/> for example.

¹⁸ Attachment SRE-6 Response to Staff 1-043 regarding Workforce Development budgets.

1 there are still many details to be worked out but as the overall Education Budget is included
2 in the total plan costs which have been demonstrated to be cost effective using the Granite
3 State Test. Staff supports this aspect of the plan, and recommends approval of the Education
4 and Workforce Development components of the Plan. Staff recommends that non-utility
5 stakeholders be involved in the development of the RFP for, and selection of, the lead vendor
6 responsible for developing the detailed workforce development activities.

7 **Q. Please summarize the observations and recommendations in your testimony.**

8 In my testimony I have supported the change to a one-year measure life savings approach in
9 the HER programs proposed by Liberty Electric and Gas and by Unitil Electric and Gas. I
10 also recommend that these programs be the subject of an external impact evaluation to verify
11 the first-year savings estimates. Currently the programs use savings estimates produced by
12 the program implementation contractor and an external evaluation is critical to support the
13 savings estimates. I recommend approval of Liberty Gas' proposed AIM program because it
14 *could* be shown to be cost-effective if its costs were included as a marketing/intake effort
15 within the Company's HPwES program. The AIM program was not demonstrated to be cost-
16 effective on its own, but it is an innovative new program which has potential to provide
17 useful information to customers and improve customer engagement with the HPwES
18 program. I recommend that the AIM Program also have an impact evaluation as soon as is
19 practical to estimate actual program savings. I recommend that the HEA program per project
20 cap be increased from the currently approved \$8,000 to \$12,000. This is a significant
21 increase and would provide the opportunity to perform all cost effective weatherization at
22 approximately 80% of all projects rather than 65% of all projects covered by the current
23 \$8,000 cap. Finally, I recommend approval of the proposed Workforce Development and

1 Education plans and that non-utility stakeholders be involved in the selection of a vendor for
2 workforce development activities.

3 **Q. Does this conclude your testimony?**

4 A. Yes.